

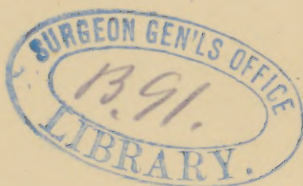
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A Contribution to the
Study of the Treatment of
the Acute Parenchymatous
Nephritis of Pregnancy

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A CONTRIBUTION TO THE STUDY OF THE TREATMENT OF THE ACUTE PARENCHY- MA TOUS NEPHRITIS OF PREGNANCY.

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ALBUMINURIA has unquestionably played too important a part in the discussions of the various diseases incident to pregnancy. It has even come to be considered by some writers as the immediate and certain precursor of an attack of eclampsia. A more careful consideration of the subject, however, shows that the presence of albumen in the urine of a pregnant woman is by no means so rare an occurrence as some authors would lead us to suppose. An examination of the urine of the last one hundred and fifty-six patients admitted to the Boston Lying-in Hospital, has showed albumen in varying amounts to be present in sixty-four, or nearly forty-one per cent.

Simple albuminuria therefore needs but a passing notice, and it is only when associated with those other well-known symptoms which betoken the presence of an acute parenchymatous nephritis, that it becomes a symptom deserving the most careful consideration and thoughtful watchfulness on the part of the physician in charge of a case of approaching confinement.

Forming one of a group of symptoms it should at once attract our attention, and make us heedful of the serious complication which may at any moment change a normal pregnancy into one of a most serious and dangerous character.

Puerperal eclampsia must unquestionably be classed

among the most fatal and startling of the complications with which the obstetrician is called upon to deal. The etiology is still *sub judice*, the treatment still a vexed question about which the most varying and even antagonistic methods have been recommended. The physician, engaged to attend a patient in an approaching confinement, who finds that the daily record of symptoms is pointing unmistakably towards the existence of an acute parenchymatous nephritis, must necessarily recognize the constantly increasing danger of the situation, and hesitate indeed as to what is really the best and safest course for him to pursue.

A reference to the recognized authorities of the profession throws but little if any light upon the subject, and indeed only serves to render the position of the accoucheur a still more perplexing one from the conflicting character of the rules of treatment prescribed by the various writers on the subject.

Professor Playfair,¹ for example, advises the induction of labor whenever the amount of albumen is large and increasing, and where especially there are signs of a general disturbance, as evidenced by headache, dizziness, or loss of sight. Professor Barker,² on the other hand, considers this procedure justifiable only "when treatment has been thoroughly and perseveringly tried without success for the removal of symptoms of so grave a character that there is a strong possibility that their continuance would result in the death of the patient." Professor Schroeder³ considers that all obstetrical manipulations are contra-indicated, so far as the maternal interests are concerned; although he admits that the life of the child may be saved if a delivery by version or the application of the forceps can be easily effected.

In a given case what then should the physician advise? The calmly awaiting the bursting of the expected storm

¹ *System of Midwifery*, 1878, p. 195.

² *Amer. Jour. Obstet.*, July, 1878, p. 458.

³ *Manual of Midwifery*, 1873, p. 319.

before doing anything ; the attempt by the use of every possible means at our disposal of relieving the symptoms, which doubtless owe their origin to a local renal disturbance ; or the induction of premature labor ?

During the last eight years I have seen, either in my own practice or in consultation, twenty-six cases of the acute parenchymatous nephritis of pregnancy. In seventeen of these patients convulsions occurred. The other nine went through their pregnancy, delivery, and convalescence with the usual symptoms, more or less marked, which showed the presence of this renal affection, without however, any outbreak of eclampsia.

In recalling the histories of the earlier cases my anxiety as to the probable prognosis is well remembered, as well as the perplexity occasioned by my efforts to reconcile the very different results which obtained in cases which, at the time of their occurrence, seemed to me, as judged by the symptoms, to be identical.

Among the patients admitted to the Boston Lying-in Hospital during the first year after its reopening were two whose cases at the time startled me, and threw considerable doubt on what ought to be my duty should similar case occur in private practice.

CASE I. — M. O'H., aged twenty-four, entered the Boston City Hospital, November 13, 1872, being at the time about four months pregnant with her second child. Two years before, she had been confined with no unfavorable symptoms, either during the pregnancy or labor. Three weeks before her entrance, without any premonitory symptoms, she had been suddenly seized with an intense headache accompanied with nausea and vomiting. At the same time a general œdema of the face and extremities appeared. The urine, at the time of her entrance, contained a large amount of albumen and numerous granular and hyaline casts. She left the hospital relieved, December 24, but returned January 4, 1873, the headache and œdema having returned. She was again discharged February 20, and entered the Boston Lying-in Hospital February 27, to await her confinement. The urine had a specific gravity of 1.025, and contained a large amount of albumen and many granular casts and blood-corpuscles. There

was marked œdema of the face and lower extremities, and more or less vomiting, nausea, and headache. An ophthalmoscopic examination of the eyes, made March 20, by Dr. O. F. Wadsworth, showed the retina to be normal. The headache became more intense, and a subsequent ophthalmoscopic examination showed numerous grayish-white, irregular, cloud-like patches in all directions about the retina. She was confined April 5, the labor lasting about five hours and being in every respect normal. She made a slow convalescence, the chief complaint being of severe headache, and was transferred May 17 to the Massachusetts General Hospital, whence she was discharged well, June 20. She was confined again in 1875, with no unfavorable symptoms, although the urine still contained a small amount of albumen and a few granular and hyaline casts.

CASE II. — K. S., aged twenty-five, primipara, entered the Boston Lying-in Hospital March 16, 1873, reporting that she had never enjoyed better health than during the past nine months. She was confined the same day, the labor being normal and lasting five hours. Five hours later she had a convulsion. Six ounces of urine were drawn, and an examination showed the specific gravity to be 1,011, a large amount of albumen and many granular and hyaline casts. Eight convulsions followed, at intervals of about an hour. She made a good recovery, the albumen and casts disappearing within five days, and she left the hospital March 31, well. She was confined again, April 2, 1874, the labor and convalescence being normal.

In the first of these two cases I had advised the induction of premature labor, feeling confident that eventually we should have to deal with a case of eclampsia. The consulting physicians, however, not agreeing to this advice, the case was left to nature, and, as the result showed, the pregnancy terminated in a perfectly normal labor. In the second case there was no suspicion of the true condition of the patient, and her delivery was followed by a serious and unlooked for complication.

Soon after, the two following cases occurred in my private practice : —

CASE III. — In the early spring of 1877, I was called to see Mrs. C., aged thirty-two, then about seven months pregnant with

her first child. She had previously had two miscarriages at the second month without any assignable cause. At the time of my visit she was complaining of nausea, vomiting, and occasional headaches. The urine was albuminous and contained a few granular and hyaline casts. The history of the next two months was one of increasing general œdema of lower extremities, flashes of light, headache, dizziness, nausea and vomiting, and an inability to read for any length of time. The amount of albumen in the urine constantly increased, as did also the number of granular and hyaline casts. Dr. Reynolds, who was consulted in regard to the case, seriously considered the propriety of inducing labor. Remembering, however, the case in the hospital, we determined to await further developments. She was confined April 16, after a normal and very rapid labor, and made a good convalescence. The albumen and casts rapidly disappeared. She was again confined April 9, 1878, the labor being in every respect normal, and there was no return of the albuminuria.

CASE IV. — The evening of February 23, 1875, Mrs. P., aged twenty-seven, primipara, was taken in labor. During the pregnancy she had enjoyed excellent health, and, at the beginning of the labor she was apparently in the best possible mental and physical condition. About twelve hours after labor began she was seized with a convulsion. An examination of the urine showed the specific gravity to be 1.022; a large amount of albumen, and numerous granular and hyaline casts were found. Four hours later a second convulsion took place. The *os uteri* was about two thirds dilated. Dr. Reynolds saw the patient in consultation and it was decided to terminate the labor at once. The *os* was dilated by digital manipulation and the long forceps applied within the cavity of the uterus. The patient made a good recovery, the casts and albumen disappeared within three weeks. She was again confined June 20, 1877, with no return of the albuminuria.

Such cases as these must occur more or less frequently in the practice of all obstetricians. Why the one case should terminate in eclampsia, and the other should not, seemed a problem difficult of solution. If there was any way by which the future in a given case could be foretold with a reasonable degree of certainty, then the question of the advisability of the induction of labor would be greatly simplified.

In studying these and similar cases during the last two or three years, it has occurred to me that the practical value of one element in the clinical history of these patients has been overlooked, or at least under-estimated, and the object of the present paper is to call the attention of the members of the society to that symptom as one at least of the missing factors in the problem which still awaits the true solution.

The following eleven cases, which have occurred since 1875, seem to illustrate the point to which I would call attention. This number of cases is, of course, too small to serve as a basis for any absolutely definite conclusions ; but they are reported with a view that future observations made by others may confirm the value of the symptom to be described, as a guide to the proper treatment of these cases, or may discard it as of no practical value.

The symptom here referred to is the amount of the daily urinary secretion in patients suffering from an attack of acute parenchymatous nephritis. The necessity of examining the quality of the urine in all suspected cases of renal complication during pregnancy, has long been recognized by the profession as of vital importance. These cases point to the diagnostic value of the quantity of the urine secreted daily in all cases of suspected threatening eclampsia. The quality of the urine, whether accompanied or not by those well-known general symptoms which usually usher in or accompany an attack of nephritis, gives us the signal of the threatening danger. The quantity of the daily urinary secretion gives us a guide by which to estimate properly the extent of the danger itself.

In reporting these cases I have given only so much of the records as relate to the subject of this paper, and have not, except incidentally, alluded in detail to the treatment of the several cases.

Six Cases terminating in Convulsions.

CASE V. — Mrs. J. J., aged twenty-three, was about eight and a half months pregnant with her first child, May 13, 1877, when I

was called to see her. For two days she had complained of intense headache, imperfect vision, and an inability to keep anything on her stomach. There was a marked œdema of the face, legs, and external labia. The urine had a specific gravity of 1.024, and contained a large amount of albumen. A microscopic examination showed a number of granular and hyaline casts. The amount passed daily was thought by the patient to have diminished during the last few days. Saline cathartics, bromide of potash, and chloral were ordered.

May 14. The amount of urine in the last twenty-fours was only fifteen and one half ounces. Three loose dejections. The general symptoms were as at last report.

May 15. The amount of urine was eight ounces. The patient was very restless, complaining of sharp, shooting pains through the right temple. A consultation was asked for with a view of inducing labor. The mother, who resided in the West, having been telegraphed for, the husband declined to have anything done until after her arrival.

May 16. Shortly after midnight the patient was seized with a convulsion, and I reached the house in about half an hour, just as she came out of a second one. No urine had been passed since three o'clock on the previous afternoon. One and one half ounces of a dark, smoky-colored urine were drawn. A subsequent examination showed, in the urine, a very large amount of albumen and numerous granular and hyaline casts, and some blood corpuscles. There were no signs of labor. The *os uteri* barely admitted the tip of the finger. By means of Barnes' dilators the *os* was dilated, and, at the end of three hours and a half, during which time she had seven convulsions, the *os* was so far open as to allow of bimanual version being performed. The membranes were ruptured, and a foot being seized, the delivery was rapidly effected, forceps being applied to the after-coming head. The tenth convulsion followed the removal of the placenta. Half an hour later the eleventh and last convulsion took place. Immediately after the extraction of the placenta, one-sixth of a grain of pilocarpin was given, followed by a second dose in twenty minutes. Thirty minutes after the first dose was taken there was a profuse diaphoresis. Six hours after the delivery, three ounces of urine were drawn. The convalescence was very tedious. The daily amount of urine gradually increased until the eleventh day, when it reached forty ounces. The casts disap-

peared on the tenth day. The albumen rapidly diminished, but a trace still remained at the time of my last visit on June 23. I saw her again October 27, on her return to Boston. She reported that it had been six or eight weeks before she had been able to be about without feeling greatly fatigued. A specimen of the urine, examined the next day, showed no albumen.

CASE VI. — Mrs. M. D., aged twenty-six, primipara, was first seen by me January 11, 1878. She was then about eight and a half months pregnant. She was able to retain scarcely any food, and complained constantly of a frontal headache and an inability to read or sleep. The urine contained a large amount of albumen and numerous granular casts.

January 12. The amount of urine passed during the last twenty-four hours was sixteen ounces. She was very irritable and restless. No food, except possibly a little beef-tea, had been retained. A consultation was asked for and all the arrangements were made for it on the following morning. The same evening she was seized with a convulsion and had had three before I reached the house, about an hour after the first attack. She was at once etherized. No urine had been passed for eight hours. Half an ounce was drawn of the same character as that examined at my previous visit. A fourth convulsion came on while an examination was being made. The *os uteri* was slightly dilated. Through the abdominal walls slight intermitting uterine contractions could be felt. By means of Barnes' dilators the *os* was rapidly dilated and the membranes ruptured. Uterine contractions now came on rapidly and the head soon passed through the *os*. The delivery was at once effected by means of the forceps. During the extraction the patient had a slight convulsion. The skin was very dry. One sixth of a grain of pilocarpin was given, producing a marked diaphoresis. Morphia, bromide of potash, and chloral were given, and the ether discontinued. During the next twenty-four hours she passed seventeen ounces of urine; during next twenty-four hours fifty-one ounces. The convalescence was somewhat tedious, but accompanied by no unfavorable symptom. An examination of the urine, made January 20, showed no casts and but a small amount of albumen.

On February 19, there was still a trace of the albumen. I had an opportunity to examine the urine again May 3, and still found a very small amount of albumen present. An examination made September 7 showed no albumen. She was at that time two months pregnant with her second child.

CASE VII. — Mrs. S. A. P., aged twenty-three, primipara, first came under my care, when three months pregnant, April 13, 1875. The history of the following four months was that of a nervous hysterical patient with almost weekly varying symptoms. Early in August, a return of the nausea and vomiting, from which she had been free for two months, caused me to reëxamine the urine, which an examination made two weeks before had shown to be normal. The specific gravity was 1,024, and it contained a small amount of albumen, and two granular casts were found after a careful examination of a number of slides. At this time I did not think to examine the daily amount of urine. An examination of the water made August 24, showed the amount of albumen to be largely increased and numerous granular casts to be present. She was now complaining of intense headache, and her general nervousness was more noticeable. Two days later she sent for me, as she was passing but very little water and was feeling "in every way worse." According to the nurse's account she had not passed more than a cupful of urine during the last twenty-four hours. A consultation was asked for, with a view to the induction of premature labor. The husband consented, but the mother of the patient insisting on the consultant being a homeopathic physician, and finding that that was the only choice allowed, the consultation was declined and I retired from the case. From the husband I subsequently learned that, for a few days, the patient improved, but early in September had an attack of eclampsia, and was finally delivered, after eleven convulsions, of a child which lived two days. Several convulsions followed the delivery, and she died thirty-six hours later.

CASE VIII. — Mrs. C. W., aged nineteen, primipara, was placed under my care by Dr. J. P. Reynolds. My first visit was on the evening of June 3, 1873. She had had two convulsions before I saw her, and was being treated by a leading homeopathic physician, with drachm doses of the fluid extract of valerian given every hour. According to the account he gave me, he considered it purely a case of hysteria. She was unconscious and had a third convulsion while the physician previously in attendance was giving me an account of the case. From her sister I learned that she was about eight months pregnant, and that for the last thirty-six hours she had been drinking freely of an herb tea, hoping to be able to increase the amount of water, of which she was passing very little. The last week she had suffered from

a return of the nausea and vomiting which had troubled her during the earlier months of her pregnancy. The previous afternoon she had also complained of an intense frontal headache. By means of a catheter almost an ounce and a half of urine were drawn, which a subsequent examination showed to contain a large amount of albumen, and numerous granular and hyaline casts. The patient was at once placed under ether, and the *os* (then two-thirds dilated) was dilated by digital manipulation. Version was performed, and the child easily extracted. The patient made a good recovery, and an examination, made July 1, showed the urine to be normal.

The patient subsequently moved to St. Louis, and died (1875) in convulsions when eight months pregnant with her second child.

CASE IX. — Mrs. E. B. R., aged twenty-one, primipara, was taken in labor early in the evening of March 27, 1875. During her pregnancy she had been under the care of a physician whose illness prevented his attendance at the time of her delivery. She had enjoyed excellent health, however, during the nine months, having occasion to consult this physician only once or twice, and then on trivial subjects. Two days before I saw her she had noticed that the daily amount of urine was greatly diminished. The last twenty-four hours she had passed water only once, and then according to her own account, "not half a tumblerful." Everything, however, seemed to be going on all right, when suddenly, the *os uteri* being about half dilated, she was seized with a convulsion. She was etherized as soon as possible, and Dr. Minot sent for in consultation. Immediate delivery was decided upon, and the patient was at once delivered with forceps. The urine was found to be loaded with albumen, and to contain a large number of granular and hyaline casts. During the next thirty-six hours, she had twenty-seven convulsions, at intervals varying from half an hour to an hour. She subsequently made a good recovery, and was confined again July 17, 1875, the labor being normal. There was no return of the albuminuria.

CASE X.¹ — Mrs. C. K., aged twenty-four, primipara, entered the Boston Lying-in Hospital, June 28, 1878, to await her confinement. The urine at the time of her entrance had a specific

¹ For the use of the records in this case I am indebted to Dr. Samuel Howe, the assistant visiting physician of the hospital, under whose care it was, and with whom I saw the patient in consultation.

gravity of 1,030, and contained albumen in moderate amount, but no casts.

July 12 the daily amount of urine secreted became very much lessened, and none was passed after the early part of the evening. At a quarter past five o'clock of the morning of the 13th, she had a convulsion. Two ounces of urine were drawn, containing a large amount of albumen and an abundance of granular casts. The patient was at once etherized. Labor began at thirty-five minutes past nine. During the next six hours, about two ounces and a half of urine were drawn at different times. The dilatation of the os was hastened by the use of Barnes' dilators, and at a quarter past eleven the membranes were ruptured, and the labor terminated by the use of the forceps. During the next five hours one ounce of urine was secreted by the kidneys, at the end of which time the patient had another convulsion. Pilocarpin, digitalis, and croton oil were successively tried without producing any apparent effect on the bowels or kidneys. A steam bath was then given by means of an atomizer and blankets. A profuse diaphoresis followed. During the next twelve hours the patient passed eight ounces of urine and had a copious watery dejection. The records of the next two days show the amounts of urine daily secreted to be forty and sixty-seven ounces respectively. The amount of albumen rapidly decreased, and only a trace was to be found forty-eight hours after delivery. The casts had also disappeared. The record of August 2 showed no albumen. She was discharged from the hospital, August 5, well.

Five Cases uncomplicated with Convulsions.

CASE XI. — Mrs. M. S., aged twenty-seven, primipara. General health good. Catamenia ceased May 15. I first saw her January 8, 1878, when nearly eight months pregnant. The last two weeks she had some nausea and vomiting. There was marked œdema of the extremities and face. She also complained of occasional transient headaches, but to these she had been subject from childhood. The bowels were constipated. The urine had a specific gravity of 1,022, and contained a small amount of albumen but no casts. The following day she reported that the amount passed in the twenty-four hours was forty-five ounces. Saline cathartics and iron were ordered.

January 15. The headaches were reported as less frequent, the œdema and gastric disturbances as no worse. The daily

amount of urine had ranged from forty-eight to thirty-nine ounces.

January 22. The daily amount of urine had fallen to between thirty and thirty-six ounces. The headache was now more or less constant, and decidedly more severe in character. The nausea and vomiting were still troublesome.

January 26. The bowels had been kept very free by the increased use of saline cathartics. The quantity of urine daily secreted remained about the same. The amount of albumen was largely increased, and both granular and hyaline casts were present.

February 7. The daily amount of urine remained as at last report. There was much difficulty in walking, owing to the increased œdema of the lower extremities.

February 9. The amount of urine passed during the last twenty-four hours had fallen to nineteen ounces. There was considerable dyspnea, and the patient complained of an inability to read, owing to a "blurring of the eyes."

February 10. The amount of urine passed was seventeen and one half ounces. Labor began shortly before midnight. The urine secreted since noon was seven ounces. Three ounces were now drawn. The labor was rapid, so far as the dilatation of the os was concerned. About three o'clock the next morning (February 11), four hours after labor began, the os was fully dilated. No urine could be drawn; the patient was very restless and irritable. Forceps were applied and the labor terminated. The skin being hot and dry, a sixth of a grain of pilocarpin was given, followed in twenty-five minutes by a profuse diaphoresis. The patient was drowsy, and answered sharply when spoken to. At seven o'clock in the morning eight ounces of urine were drawn. She seemed very sleepy during the next twenty-four hours. The urine rapidly increased in amount, while the albumen diminished as rapidly. A trace only of the albumen remained after two weeks. She had no milk, but otherwise made a normal although slow recovery. An examination of the urine, made May 5, showed still a trace of the albumen, although no casts could be found. Her general health seemed perfect.

CASE XII. — Mrs. L., aged twenty-seven, primipara, was first seen by me, as regards her pregnancy, January 28, 1878. She was then about six and one half months pregnant. She complained of a puffiness of the face. There was also œdema of the lower ex-

tremities. An examination of the urine showed only a trace of albumen. She was troubled also with constipation, for which Hunyadi Janos water was prescribed.

February 9. The bowels were reported as freer, and the œdema of the feet less marked.

February 21. During the last ten days she had been troubled with a slight nausea, and once with vomiting. The amount of albumen in the urine was increased. She was asked to keep a daily record of the amount of water passed, which she did up to the time of her confinement.

March 1. The daily amount of urine had ranged from thirty-nine to forty-three ounces. The nausea was still troublesome, although there had been no actual vomiting. She complained of slight headache, especially noticeable evenings. Iron was prescribed.

March 8. The daily amount of urine since the last report had ranged between thirty-five and forty ounces. The albumen was increased, and a few granular casts were to be found. The headache was more frequent.

March 25. The daily amount of urine since the last report had ranged between thirty-one and thirty-seven ounces. The nausea was more or less constant, and she had had several attacks of vomiting.

April 1. The daily amount of urine ranged between twenty-nine and thirty-one ounces. The casts were increased in number. The œdema of the lower extremities was so great as to render locomotion extremely difficult. She was unable to read, owing to the headache, and there were frequent flashes of light before the eyes.

April 7. The daily amount of urine had fallen to about nineteen ounces. The headache was constant and severe. She was obliged to keep her bed, owing to the nausea and vomiting which was excited by any attempt to rise. The bowels were kept freely open by medicine. Bromide of potash, and chloral were ordered.

April 9. She had rested better, and the headache was more bearable. The urine was as at last report. An examination of it showed a large amount of albumen, and numerous granular and hyaline casts.

April 11. There was a slight increase in the amount of urine, but the daily quantity passed ranged between twenty-one and twenty-five ounces, until the evening of April 14, when she was

confined, the labor lasting about seven hours. Owing to her general nervous condition forceps were applied as soon as the os was fully dilated. She made a good recovery and was able to lie on a sofa the thirteenth day. The albumen disappeared rapidly, and an examination of the urine, made May 14, showed an absence of both albumen and casts.

CASE XIII. — Mrs. A. T., aged thirty-three, multipara, was first seen by me August 6, 1876, when about eight months pregnant with her third child. Her previous pregnancies and labors had been perfectly normal. The last week she had noticed some œdema of the feet and ankles, and had also been troubled with an occasional nausea. The urine had a specific gravity of 1.019, and contained a small amount of albumen. Two weeks later the albumen had increased considerably, and a few granular casts were to be seen under the microscope. Diuretics and iron were ordered.

August 20. The amount of urine during the last twenty-four hours was thirty-eight ounces. She complained of headache and a decided increase in the œdema of the lower extremities.

August 25. The general symptoms were the same as at the last report. The number of casts in the urine was decidedly increased. The daily amount of urine ranged between twenty-nine and thirty-four ounces.

August 30. Almost constant nausea and vomiting during the past two days. There were general symptoms of nervous prostration. Any attempt to assume an erect posture was followed by dizziness and nausea. The daily amount of urine ranged between twenty-six and thirty ounces.

September 1. During the past two days the amount of urine had been respectively twenty-five and seventeen ounces. Her complaint was mainly of the nausea and headache. Labor began during the afternoon. No urine had been passed since 12 o'clock and three ounces of urine were drawn by a catheter. The labor was very rapid, lasting a little over three hours. The patient made a good convalescence. The urine rapidly increased in amount, and the albumen had disappeared in six days after the delivery.

CASE XIV. — Mrs. D., aged thirty-one, primipara, was seen by me April 7, 1877. She was then eight and one half months pregnant. For two weeks there had been a history of constantly increasing headache, nausea and vomiting, disturbance of vision,

and œdema of face and lower extremities. The urine contained a large amount of albumen, and granular casts in abundance. The bowels were constipated. Saline cathartics and iron were ordered.

April 8. The patient reported that she had passed thirty-two ounces of urine during the last twenty-four hours.

April 12. The daily amount of urine had ranged from twenty-eight to thirty-three ounces. The last two nights she had been unable to sleep, except at short intervals, owing apparently to extreme nervousness. The bowels had been freely moved each day.

April 16. The daily amount of urine had fallen to about twenty ounces, until the last twenty-four hours, during which she had passed only seventeen ounces. She complained of a drowsiness, which was very noticeable. She was unable to read, and took but little interest in the events transpiring about her. The three hours preceding my visit she had complained of pains, as though labor was about to begin. Six hours later I was called, the waters having broken. She was very restless, and complained of intense headache and a dyspnœa which prevented her lying down. No urine had been passed since my last visit. The os uteri was two thirds dilated. Two and a half ounces of urine were drawn containing a large amount of albumen and numerous granular and hyaline casts and blood-corpuscles. The os was at once dilated, the patient being placed under ether, and the delivery effected by the forceps. Six hours later she passed voluntarily seven ounces of urine. The convalescence was normal. The renal secretion became rapidly increased, and forty-eight hours later no casts could be found, although the albumen remained until the seventh day after her delivery. •

CASE XV. — Mrs. A. C., aged twenty-seven, primipara, came under my care September 29, 1876, when eight months pregnant. Her only complaint was of constant nausea and occasional vomiting. The urine contained a large amount of albumen and numerous granular casts. There was scarcely any œdema of the lower extremities, although the face seemed to be somewhat swollen. Two days later she reported the daily amount of urine to be thirty-six ounces. There was no noticeable change during the next three days, but early on the morning of October 4 I was sent for in haste, the patient having fainted. On arriving at the house I found her in bed, propped up with pillows, and complaining of an intensely disagreeable feeling in the back part of her

head, and more or less dyspnœa. The last twenty-four hours the amount of urine passed had been only sixteen ounces. There had been no symptoms of labor, so far as I could learn, except a few fugitive pains in the back. The os uteri was, however, two thirds dilated. Her manner was drowsy, and her answers to questions short, and as though she did not wish to talk. Being unwilling to attempt version, but being anxious to hasten the delivery, the membranes were ruptured artificially. Labor pains became at once pronounced, and the os, rapidly dilating, forceps were applied as soon as possible and the delivery effected. The child was made to breathe with great difficulty, and lived only six days. The secretion of urine became rapidly reëstablished, and an examination showed no trace even of albumen on the ninth day. The convalescence was, in every respect, a normal one.

It will be seen that these eleven cases all present certain symptoms in common. The patients were pregnant, with one exception all being primiparæ; they all had œdema more or less general; gastric disturbances more or less marked; headache and other symptoms pointing to a disturbance of the nervous system; albuminuria and a condition of the urine, as shown by the microscope, which pointed unmistakably to the true nature of the renal complication. In six of these the quantity of urine became gradually diminished until the amount secreted in the twenty-four hours became very small, and then began attacks of eclampsia. These ceased, or grew less frequent, as the urinary secretion became reëstablished. In five cases the daily quantity of urine, although diminished from the normal amount, did not fall nearly as low as in the first class of cases; and although the general symptoms were (cases XII. and XIV.) even more marked than in any of the cases in which convulsions occurred, yet the labor was normal and there were no attacks of eclampsia.

This paper does not, of course, pretend to deal with the problem of what causes an attack of acute parenchymatous nephritis during the course of pregnancy, a subject recently so ably treated by Professor Bartels,¹ or why, owing to the

¹ Ziemssen's *Encyclopædia of the Practice of Medicine*, v., xv.

existence of that disease, eclampsia should occur; but it suggests the question as to whether the daily quantity of urine secreted may not be a guide as to the best method of treating such cases. Further observations are, of course, needed for a contradiction or verification of the hint here thrown out. A daily chemical analysis of urine in such cases may throw some further light on the question why the daily amount of urine secreted is of value, and on this point I hope to be able, at a future time, to report further.

For the present, I would submit the following as a summary of the points which I have endeavored to bring forward in this paper:—

First. It is our duty occasionally to examine the urine of pregnant women who may have committed themselves to our care during their pregnancy, with a view of early detecting, by chemical and microscopical examination, the invasion of an attack of acute parenchymatous nephritis. This should in all cases be done, even although no noticeable symptom suggests the presence of the threatened complication. Had this been done in Cases II. and IV., the occurrence of the eclampsia, of which we had no other warning, might have been avoided.

Second. When such an examination has shown us clearly that this complication exists, the urine of the patient should be daily measured, in order that we may know whether the kidneys are properly performing their functions, and are secreting the normal amount of urine.

Third. Whenever we find that the amount of urine daily secreted is falling markedly below the normal amount, we should endeavor, as recently recommended by Professor Barker, by proper treatment to reestablish the impaired function of the kidneys, or, failing in this effort, to supplement, if possible, their loss of action by the increased action of other excretory organs.

Fourth. If, despite all our efforts, the amount of urine is very small and constantly lessening, no matter whether at the same time the general symptoms of danger are increasing or not, we should not hesitate at once to induce

premature labor and thus avoid the occurrence of an attack of eclampsia, which is sure to come whenever the daily urinary secretion falls below a certain amount. If the patient has reached that period of her pregnancy when the child is viable, then the induction of premature labor becomes still more our imperative duty.

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